Important Advances in Clinical Medicine

Epitomes of Progress—General Surgery

The Scientific Board of the California Medical Association presents the following inventory of items of progress in general surgery. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist the busy practitioner, student, research worker or scholar to stay abreast of these items of progress in general surgery which have recently achieved a substantial degree of authoritative acceptance, whether in his own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on General Surgery of the California Medical Association and the summaries were prepared under its direction.

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Gallbladder and Biliary Tract Scanning with ^{99m}Tc-PG

ORAL CHOLECYSTOGRAPHY and intravenous cholangiography generally are used to evaluate diseases of the gallbladder and biliary ductal system. However, poor intestinal absorption of oral contrast agents, as well as jaundice and derangement of liver function, may result in nonvisualization of a normal gallbladder and biliary tract. In addition, the contrast agents occasionally cause adverse reactions. These problems have stimulated a search for alternatives to cholecystography and cholangiography to avoid morbidity and to make better imaging of the biliary system possible even in the presence of jaundice. Technetium-99m-pyridoxylideneglutamate (^{99m}Tc-PG) is a new nontoxic radiopharmaceutical that is taken up by hepatocytes and rapidly excreted into the bile canaliculi which enter the gallbladder through the cystic duct. Results of studies of toxicity in mice, dogs and humans indicate a wide margin of safety for this agent. Additionally, findings in experimental studies have shown that ^{99m}Tc-PG has a rapid and consistent blood clearance and urinary excretion. The concentration of the ^{99m}Tc-PG in the bile is sufficient to allow satisfactory imaging of the biliary tree and gallbladder. Therefore this agent can be used for scanning the biliary ductal system and gallbladder.

Satisfactory images of the biliary tract can be obtained using small dosages (2 to 5 mCi) of this agent. In normal human subjects, the agent reaches the liver in 5 minutes and the common bile duct (CBD), gallbladder and duodenum in 10 to 20 minutes. The gallbladder is not visualized when the cystic duct is obstructed in patients with acute and chronic cholecystitis. In partial CBD obstruction, a distended CBD is visualized and there is delay in transit of radioactivity into the duodenum. In complete CBD obstruction, no radioactivity is seen in the biliary and gastrointestinal tract up to 24 hours after the administration of ^{99m}Tc-PG, but there is immediate and intense secretion of the radioactive agent into the genitourinary system. This is probably due to biliary stasis and lack of dynamic movement of the bile necessary for carrying the radioactive agent into the biliary ductal system down to the point of obstruction. Hepatocellular disease is characterized by delayed liver clearance and delayed visualization of the biliary and gastrointestinal tracts. In patients with asymptomatic cholelithiasis without ductal obstruction, biliary scanning is inferior to oral cholecystography for the detection of gallstones, although the gallbladder and biliary ductal system are well visualized.

The advantages of biliary scanning include safety, simplicity and availability. In addition, it

can be done in jaundiced patients as well as in those allergic to radiologic contrast agents. At present, ^{99m}Tc-PG cholescintigraphy is preferable in the initial evaluation of patients with acute cholecystitis or jaundice, while oral cholecystography is desirable in the initial evaluation of nonjaundiced patients with cholelithiasis.

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Surgical Management of Portal Hypertension with Variceal Hemorrhage

NEWER SURGICAL TECHNIQUES have been developed in the past decade for treating patients with portal hypertension and variceal hemorrhage. The significant metabolic impairment, notably hepatic encephalopathy and hepatic failure, that occurs following portacaval decompression led Warren to devise the selective, distal splenorenal shunt. Drapanas popularized the use of the H-graft (a prosthetic shunt) between the superior mesenteric vein and vena cava. Although the results of operations using these approaches have been encouraging, recurrent blood loss due either to shunt thrombosis or persistent portal hypertension despite a patent shunt has occurred. This complication also has occurred following the original splenorenal shunt popularized by Linton, probably because the smaller diameter splenic vein is associated with a high thrombosis rate or an inadequate sized stoma for adequate portal decompression.

During the past four years, renosplenic shunts have been used at the University of California Medical Center, San Francisco, in alternate patients in whom operative management of portal hypertension was required. The caval end of the divided left renal vein is anastomosed to the side of the splenic vein. The stoma created averages 2 to 3 cm in diameter and portal pressure has been effectively reduced in all instances. The distal end of the renal vein is oversewn and renal venous drainage occurs through adrenal and gonadal tributaries or the capsular veins. A transperitoneal route usually is used for this shunt. However, in some patients in whom multiple laparotomies or attempted shunt procedures have been carried out previously, or in whom massive ascites is present, a retroperitoneal route is used for creation of a renosplenic shunt. This is an approach that avoids excessive blood loss and reduces operative time by avoiding tedious dissection. In addition, the protein-rich ascitic fluid present in patients with massive ascites is conserved, and the intraoperative and postoperative maintenance of fluid and colloid requirements is simplified.

Experience with 38 patients in whom renosplenic shunt was carried out showed there to be fewer technical problems and metabolic derangements than have been associated with other shunts. Hepatic encephalopathy developed in only one patient.

The left renal vein appears to be an acceptable autogenous conduit for portal decompression. We believe these results justify its continued use in emergency as well as elective instances in which the control of variceal hemorrhage by reduction of portal pressure is necessary.

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Adjuvant Chemotherapy of Breast Cancer

RESULTS OF two recent studies have shown that prolonged intermittent chemotherapy after operation can decrease the early recurrence rate in patients with stage 2 breast cancer. Women in both studies had a radical mastectomy (conventional, modified or extended) and had one or more positive axillary nodes. They were then randomly assigned either to a group in which no additional therapy was given or to one in which adjuvant chemotherapy was carried out.

In the first study there was a recurrence rate of 22 percent in the control group compared with 10 percent in the group treated with 1-phenylalanine mustard (L-PAM). The differences were even greater in premenopausal women (30 percent versus 3 percent) and in those in whom four or more positive nodes were present (38 percent versus 15 percent). The average follow-up after operation was nine months.

The second study reported a recurrence rate of 18 percent in the control group compared with 4 percent in the group treated with cytoxan, methotrexate and 5-fluorouracil (CMF). Statis-